

## **TWO-HANDLE FAUCET DESIGN WITH MANIFOLD ABOUT FAUCET HANDLES**

### **BACKGROUND OF THE INVENTION**

[0001] This invention relates to a two-handle faucet design wherein a single manifold receives the combined fluid from a hot and a cold water supply line, and wherein the faucet handles are mounted vertically below the manifold.

[0002] In modern faucet designs, there are a variety of operational positions for the faucet handles, and the faucet spout. In most modern faucets, flow tubes extend through a hollow spout body to an outlet spout. The handles for controlling the flow of hot and cold water are positioned vertically above this hollow spout housing. By turning the handles, one can control the mixture of hot and cold water delivered to the spout outlet.

[0003] These designs typically require brazing at each of several fluid connections between the tubes, and the various fluid flow passages. It would be desirable to eliminate the requirement for brazing.

[0004] Further, it is a goal of modern faucet design to be able to have as many available operational positions for the handle and spout body as is possible. Thus, the restriction that to date has required the spout body to be vertically below the handle is somewhat undesirable.

### **SUMMARY OF THE INVENTION**

[0005] In the disclosed embodiment of this invention, a spout body is positioned vertically above the two handles in a faucet. The faucet handles may be turned to control the amount of hot and cold water delivered to a spout outlet.

[0006] In particular, the spout handles preferably include a central passage extending through a central handle axis, and allowing the water to flow along the length of the handle axis to an outlet. The outlet is connected to the spout body such that the outlets of each of the hot and cold lines are delivered to the spout outlet.

[0007] In one preferred embodiment, the spout body is a hollow manifold, which does not include any separate tubing, etc. In a second embodiment, tubing, as is generally known in the faucet art, may be utilized.

[0008] These and other features of the present invention can be best understood from the following specification and drawings, the following of which is a brief description.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

[0009] Figure 1 is a perspective view of an inventive faucet arrangement.

[0010] Figure 2A is a cross-sectional view of the Figure 1 embodiment.

[0011] Figure 2B adds a detail to the Figure 2 embodiment.

[0012] Figure 3A is a perspective view of a second embodiment.

[0013] Figure 3B is a detail of the Figure 3 embodiment.

[0014] Figure 4 is a partially exploded view of the Figure 3 embodiment.

[0015] Figure 5 shows the detail of the Figures 3 and 4 embodiments.

#### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

[0016] Figure 1 shows a faucet 20 having a spout body 22 leading to a spout 23. A pair of handles 24 and 26 may be turned to control the mix of hot and cold water leading to

the outlet 23. As shown, the faucet handles 24 and 26 are each associated with a cap 28 mounted above the spout body 22.

[0017] In the prior art, the spout body has typically been positioned vertically below the handles. The present invention is unique in mounting the spout body above the handles. Aspects of the inner structure of the faucet handle provide this flexibility. In particular, as shown in Figure 2A, the handles 24 and 26 are mounted in a deck 30. Each of the handles communicates with a respective water supply line 32. As is known, one line 32 supplies hot water and one supplies cold water.

[0018] Each of the handles has an inner rotating shaft 36 having a valve 38 at a lower end. The valve may be as known, and prevents or allows the flow of water from its respective line 32 upon turning of the handle 24 or 26. As is shown, a water supply line 40 leads through the shaft 36 to an outlet 42 extending radially outwardly of the shaft. This is a unique feature of the invention, and provides the ability to have the spout body 22 mounted vertically above the handle. As shown in Figure 2A, the spout body 22 is a hollow manifold formed of one-piece hollow casting. The inlet 46 into the manifold receives the water from the outlet 42 and mixes and communicates the water to the spout outlet 23. As can be appreciated, and as shown in Figure 2B, the manifold may be hollow, and formed of two pieces 122 which are mounted together to provide a fluid tight, yet simple arrangement. That is, Figure 2B shows an alternative embodiment wherein the manifold is formed of two pieces. While stamped pieces are shown, the two stamped pieces could be replaced by a clam shell design. The pieces may be sealed with sealant and then crimped. Further, the pieces may be castings, plastic injection molded, hydro formed or formed by various other methods. Essentially, the inventive manifold is preferably formed of brass or plastic, although other

materials may be utilized. The inventive manifold thus provides all of the mixing and flow delivery structure between the outlets of the faucet passages and the spout. This eliminates all of the many flow tubes, etc. which are required in the prior art.

**[0019]** As shown in Figure 2A, an upper end 44 of the shaft 36 is received within the cap 28. Thus, as shown here, due to the flow through the shaft 36, the water is delivered above the handle and into the spout body 22. As shown in this figure, the spout body is a hollow manifold.

**[0020]** As shown in Figure 2C, in another embodiment 100, the handle 102 rotates the shaft 103 having a passage 104. Shaft 103 is mounted within an opening 108 in a lower plate 107 of the manifold 106. Otherwise, the valving, etc., operates as in the Figure 2A embodiment.

**[0021]** Figure 3A shows another embodiment 50 wherein the handles 52 turn relative to a central cover 54. From Figure 3A it can be appreciated that the handles 52 each have a side wedged portion 53 that allows the handle to turn relative to the cover 54.

**[0022]** As can be appreciated from Figure 3B, the handles 52 each include central shafts 100 which communicate with a water supply line 101 as in the prior art. A passage 103 passes through the shaft 100 as in the prior art to an upward position 102. Thus, water flows through the entire axial length of the shaft 100 into the tubes 56.

**[0023]** Within the cover 54 is a pair of tubes 56 which communicate the water from the passages 102 shown in Figure 3B into the tubes 54 and 56. From the tubes 56, the water is communicated through the forward extending lines 58 to the spout outlet 60 (see Figure 4).

**[0024]** As shown in Figure 4, with the cap 54 removed, the tubes 56 and 58 can be seen to extend through a remainder 60 of the spout body.

**[0025]** As shown in Figure 5, a forward end 62 is received in an outlet 64 of the spout body. Further, a support structure 66 will support the tubes 58 at the location where they are mounted to the outlet 62.

**[0026]** Although preferred embodiments of this invention has been disclosed, a worker of ordinary skill in this art would recognize that certain modifications would come within the scope of this invention. For that reason, the following claims should be studied to determine the true scope and content of this invention.